

REMARKS

Applicant has carefully reviewed and considered the Non-Final Office Action mailed on June 30, 2006, and the references cited therewith. This first reply is being filed within three months of the mailing date of the Non-Final Office Action.

Claims 1-20 and 42-54 were previously cancelled. Claims 67, 68, 69, 77 and 78 are amended. The amendment to claim 69 is supported by Figure 14B. Claims 68, 68, 77 and 78 are amended to independent form as described below under *Claim Objections*. No new matter is added. As a result, claims 21-41 and 55-87 are now pending in the present application. The total number of claims remains at 54, with number of independent claims increased by 4 to a total of 16. Please charge the small-entity fee of \$400 for the 4 additional independent claims, plus any additional claim fees or other required fees, or credit overpayment to Deposit Account number 502931.

Claim Objections

Regarding the June 30, 2006, Office Action § 1: Claims 67, 68, 77, and 78 were objected to by the Examiner as containing allowable subject matter. These claims were rewritten in independent form including all of the limitations of the base claim and any intervening claims. Reconsideration and withdrawal of the objection is respectfully requested.

Claim Rejections – 35 USC § 112

Regarding the June 30, 2006, Office Action § 3: Claims 33, 71, and 72 were rejected by the Examiner under 35 U.S.C. 112 as failing to comply with the enablement requirement. Applicant respectfully traverses. As to the enablement and the written-description requirement, the present claim 33 finds support in the language of claims 21 and 33 as originally filed in the parent application 09/816,628 (now US Patent No 6,805,998):

21. A method for making a combined battery and device apparatus, the method comprising:

providing a substrate having a major surface area;

depositing a first conductive layer on a first surface area of the substrate's major surface area;

depositing onto the first conductive layer a battery including a cathode layer, an anode layer, and a electrolyte layer located between and electrically isolating the anode layer from the cathode layer, wherein the anode or the cathode or both include an intercalation material, the battery disposed such that either the cathode layer or the anode layer is in electrical contact with the first conductive layer; and depositing an electrical circuit on the battery.

33. The method according to claim 21, wherein the substrate includes an integrated circuit, the method further comprising:

depositing an insulating layer on the integrated circuit, the insulating layer including a plurality of through vias;

depositing a cathode-conductor of the battery on a face of the integrated circuit opposite the insulating layer;

electrically connecting the cathode-conductor of the battery to the integrated circuit though a first one of plurality of through vias;

depositing the cathode layer of the battery on the cathode conductor; depositing the electrolyte layer on the cathode layer;

depositing the anode on the electrolyte layer; and

electrically connecting the anode to the integrated circuit though a second one of plurality of through vias.

Claim 33 recites, "depositing a cathode-conductor of the battery on a face of the integrated circuit opposite the insulating layer." The claim is further supported by the Figure 26A and the accompanying description in paragraph [0289] of the application as filed:

[0289] Figure 26A shows a perspective view of an device 2600 of the present invention having an integrated circuit 2510 overlaid on its back with a battery 2320. This embodiment is similar to that of Figure 25A, except that the battery 2320 is deposited on the back of IC 2510, and is wire-lead bonded to contact 2514 using wire 2614 from battery contact 2519 and to contact 2515 using wire 2615 from battery contact 2518.

Accordingly, reconsideration and withdrawal of the rejection with regard to these claims is respectfully requested.

Claim Rejections – 35 USC § 103

Regarding the June 30, 2006, Office Action paragraph 4: Claims 21-29, 31, 35, 36, 55, 60, and 63-66 were rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over *Thomas et al.* (US Patent 5,849,426, hereinafter *Thomas et al.*). Applicant respectfully traverses.

Thomas et al. describes a hybrid energy storage system where, “The battery cell or cells are disposed in a battery pack, as shown hereinbelow in FIG. 3.” (See *Thomas et al.* column 2, lines 35-36) In *Thomas et al.*, the battery is formed outside of the substrate, and the completed battery later disposed or placed in the housing (the Examiner states that this housing is what he considers to be the substrate).

Disposed in the housing base is the first energy source, 66. The first energy source 66 is one or more batteries of the type described hereinabove. As illustrated herein, the first energy source comprises five discrete cells 68, 70, 72, 74, 76, electrically connected in series and packaged in shrink wrap, in a manner well known in the art. (See *Thomas et al.* column 4, lines 35-41)

The *Thomas et al.* Figure 3 shows a completed battery 66 separate from housing 54 and from housing 52. *Thomas et al.* does not form its battery by depositing thin films on the housing.

In *Thomas et al.*, the second energy storage device, such as a capacitor, is also formed outside of/separately from the substrate, and disposed or placed in the housing. Thus, if the battery and/or capacitor are deposited as thin films, these are deposited on substrates other than the housing and these partially assembled parts are put together in the housing.

In contrast, the present invention claims depositing a series of thin-film layers on a substrate, that once deposited, form a combined battery and device apparatus. *Thomas et al.* does not describe or suggest “successively depositing” a “plurality of thin-film layers” on the housing or substrate forming a battery and energy storage device.

The Examiner admits, “However, the reference does not expressly teach that a battery and capacitor are made by successively depositing a plurality of thin-film layers on the substrate, as recited in claims 21, 28, and 29. The reference further does not expressly teach that the substrate comprises a polymer having a melting point substantially below 700 degrees Centigrade, as recited in claims 36 and 55.” The Examiner asserts that the order of the steps does not matter and then concludes that Thomas’s steps must include depositing thin films onto something, so that when this something is assembled as parts put together on the housing of

Thomas, that this is equivalent to depositing the thin films on the housing. This is clearly not the case. As an analogy, depositing films to form devices such as transistors, resistors, and capacitors on an integrated circuit (Jack Kilby's original patent 3,138,743 on the integrated circuit) is not equivalent to forming the devices individually from films and then assembling the parts into a circuit. The method claimed in the present invention provides a new result that allows weight, size, and/or cost advantages over previous methods of Thomas.

Accordingly, reconsideration and withdrawal of the rejection with regard to these claims is respectfully requested.

Regarding the June 30, 2005, Office Action § 5: Claims 21-23, 28-30, 35, 37, 55-62, 69, and 79 were rejected by the Examiner under 35 U.S.C. 103(a) as being unpatentable over Meitav et al. (US Patent 6,576,365, hereinafter *Meitav et al.*). Applicant respectfully traverses.

The Examiner admits that, "The reference does not expressly teach that a battery and a capacitor are located next to each other either in a vertical or horizontal direction as recited in the instant claims." *Meitav et al.* describes:

In one exemplary embodiment, there may be provided a multi-cell capacitor that comprises two elements of conductive polymer current collectors coated with a metallic film and adhered to a plastic perforated isolating frame. Such a combination forms a current collector assembly. Within the openings formed in each of the perforated isolating frames is present a high surface area carbon-based electrode material to form capacitive electrode plates. Where a current collector longitudinally electrically connects two iso-planar cells in series, the current collector is referred to as a common current collector. Where a current collector connects only a single cell to some external circuitry or contacts the end cell of a stack of cells, thereby connecting the stack to some external circuitry, the current collector is referred to as a terminal current collector. Such common and terminal current collectors are used externally to the stack or stacks of cells. (See *Meitav et al.* column 3, line 64, through column 4, line 13)

Meitav et al. describes laminations of films and metallic layer adhesively attached.

Meitav et al., like *Thomas et al.*, does not describe or suggest successively depositing a series of thin-film layers on the housing or substrate forming a battery and energy storage device, but instead forms a battery by stacking individual parts that are formed prior to stacking. *Meitav et*

al. describes using perforated isolating frames to support the structure, in contrast to the present invention using thin-film layers on a substrate (see *Meitav et al.* Abstract).

In contrast, the present invention claims a method of depositing a series of thin-film layers on a substrate, once deposited, form a combined battery and device apparatus. *Thomas et al.* does not describe or suggest "successively depositing" a "plurality of thin-film layers" directly on the housing or substrate forming a battery and energy storage device. The Examiner suggested in the November 30, 2005, Office Action § 7 that the claims be amended to recite the specific way(s) in which the layers are deposited, as this may be sufficient to patentably distinguish over the references. Claims 21, 28, 29, 30, 33, and 37 were amended as suggested to include "successively depositing" a "plurality of thin-film layers". The Examiner now admits, "The reference further does not expressly teach that the battery and capacitor are made by successively depositing a plurality of thin-film layer on the substrate, as recited in claims 21, 28, 29, 30, and 37." The method claimed in the present invention provides a new result by providing a weight, size, and/or cost advantage over previous methods. The method claimed also provides a curved convex face and concave face assembly further distinguishing over the reference.

Accordingly, reconsideration and withdrawal of the rejection with regard to these claims is respectfully requested.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney (952-278-3501) to facilitate prosecution of this application.

If not otherwise provided herewith, please consider this a request for an extension of time for a sufficient number of months to enter these papers. If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 502931.

Respectfully submitted,

MARK L. JENSON ET AL.

By their Representatives,

LEMAIRE PATENT LAW FIRM, PLLC
P.O. Box 11358
ST. PAUL, MN 55111
TELEPHONE: 952-278-3500

Date: October 2, 2006

By: Charles A. Lemaire

Charles A. Lemaire
Reg. No. 36,198

CERTIFICATE OF MAILING UNDER 37 CFR 1.8: I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Washington, D.C. 22313-1450, on the 2nd day of October, 2006.

Dale J. Thomforde
Name

Ch. J. Thomforde
Signature